Educational interoperability

A visual language

Why interoperability matters

Education is evolving. Students expect flexible learning paths and to move easily between institutions, employers, and learning providers. Yet, systems often don't communicate well, data exchange remains fragmented, and processes are inefficient.

This is where interoperability makes a difference: it ensures that students, teachers, and organisations can exchange information seamlessly. When systems are well connected, learning becomes more accessible, and institutions work together more efficiently.

Making interoperability understandable

Interoperability is complex. It involves legal, organisational, semantic and technical aspects. Achieving it requires a shared understanding between professionals at different levels. This Interopvisual helps make this complexity tangible.

Want to know more?
Scan the QR code or visit:
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Who is it for?

The Interopvisual provides a structured way to discuss and improve interoperability. Whether you are a policy advisor, architect, or functional manager, this tool helps clarify data exchange challenges, visualise processes, and co-design solutions that enhance the learner's journey. By adopting these visual tools, we can work together towards a future-proof education system that is more flexible, efficient and inclusive.

Tell your own story

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Policy & Legislation

Legislation is produced and implemented on different scopes:

- Local
- National
- International

Example:
GDPR is European legislation that has a global impact. It is translated into national legislation and fuels the local privacy policy of an institution.

Standards

A standard is an agreement on information or processes that supports consistent digitalisation and data exchange.

Standards can cover different aspects, such as:

- **Semantic standards,** defining terms like 'diploma' or 'teacher'.
- **Metadata standards,** enabling data to be placed in the right context.
- **Standard processes,** such as conducting a privacy impact assessment when making decisions about collecting and using personal data.
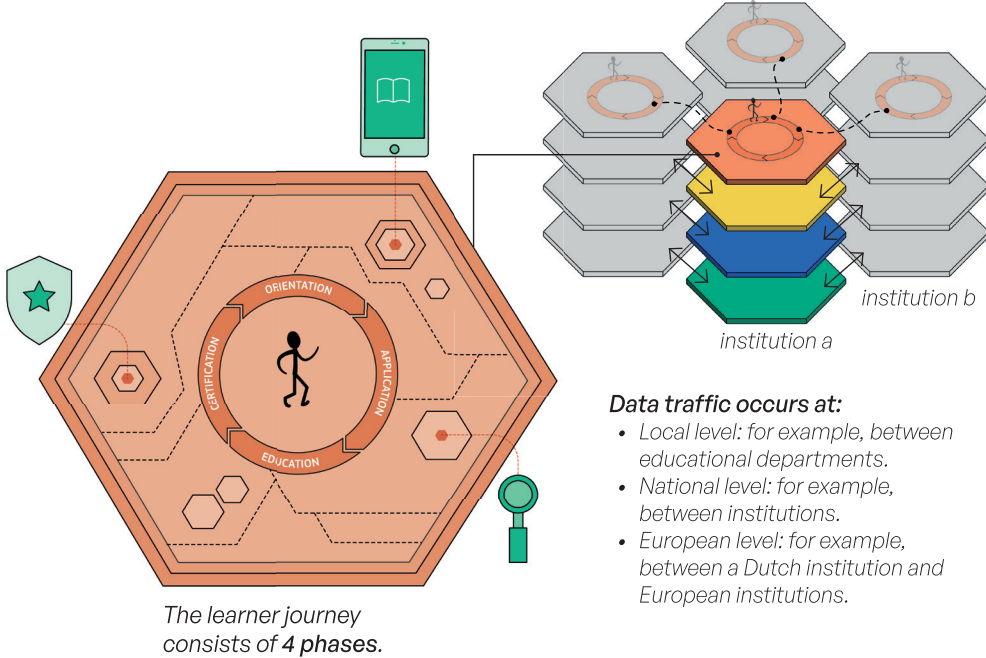- **Technical standards,** such as IPv6 for network communication.

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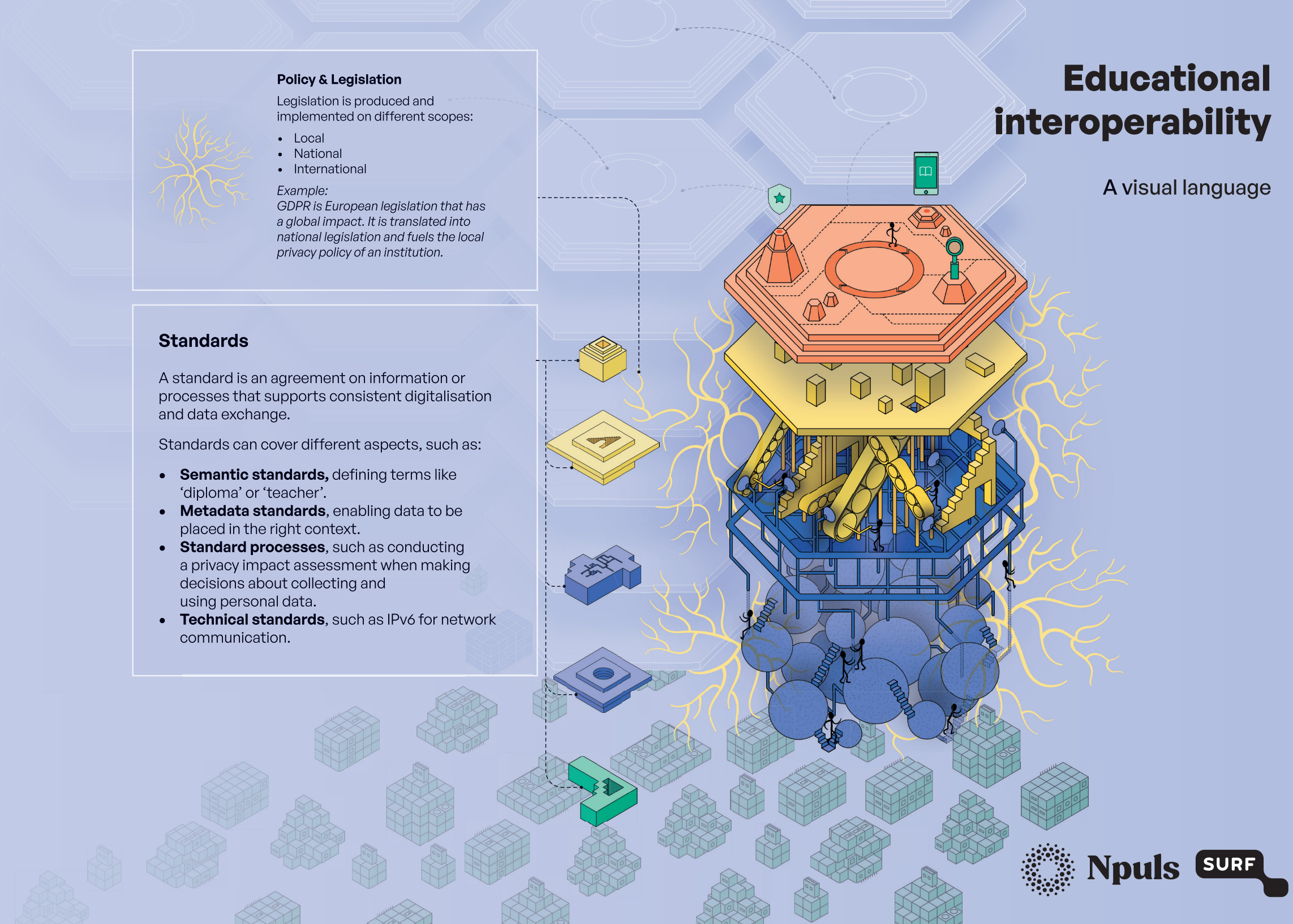
The learner journey

The *learner journey* is at the centre of our approach. To facilitate this journey, an educational ecosystem of institutions, services, providers, etcetera must work together seamlessly.

The learner journey consists of 4 phases.

institution a

institution b

Data traffic occurs at:
- *Local level: for example, between educational departments.*
- *National level: for example, between institutions.*
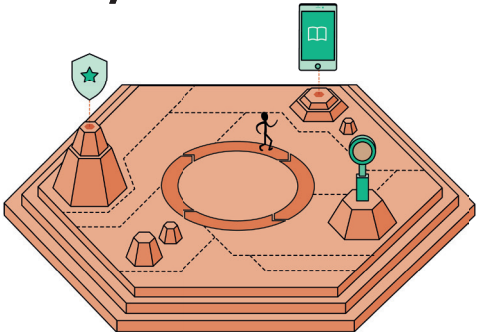- *European level: for example, between a Dutch institution and European institutions.*

What is interoperability?

Interoperability enables different systems, organisations, and processes to collaborate, exchange data, and understand information. Interoperability is a prerequisite for collaboration, while maintaining autonomy.
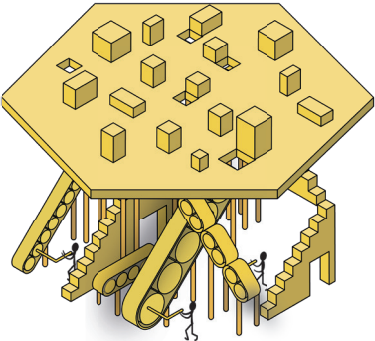
The layers

Users & Services

Our approach is platform-based. The top layer outlines the objectives of the users. Learner, teacher and staff want their needs to be fulfilled.

Examples:
- *The learner wants an education path that fits/ satisfies their needs.*
- *The teacher can create courses that fit the learner's need and meet desired educational outcomes.*

Organisation & Processes

Next, the 'business' layer focuses on designing and managing the education operations to meet the goals set in the top layer. This can include things like curriculum development, exam organisation, or scheduling.

Examples:
- *The program director designs a program in collaboration with the teachers' team.*
- *The CIO, in collaboration with educational experts and IT teams, oversees the procurement and configuration of the most suitable LMS.*
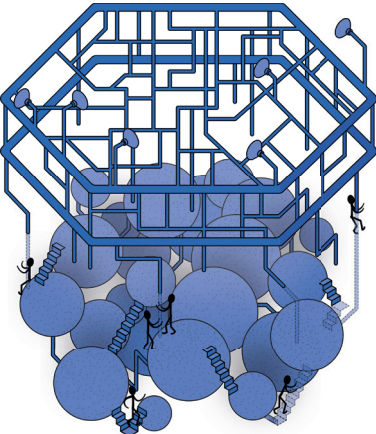
Applications & Information

This layer is about what IT should do.

Examples:
- *Functional application managers find solutions that meet user needs. They define how to execute these within an application, following business processes.*
- *The International Exchange Officer can access student data for current exchanges. This helps them keep information up-to-date to manage and support international programs well.*
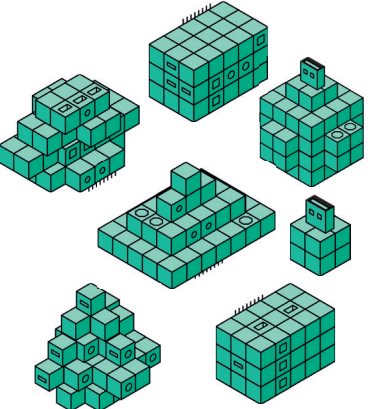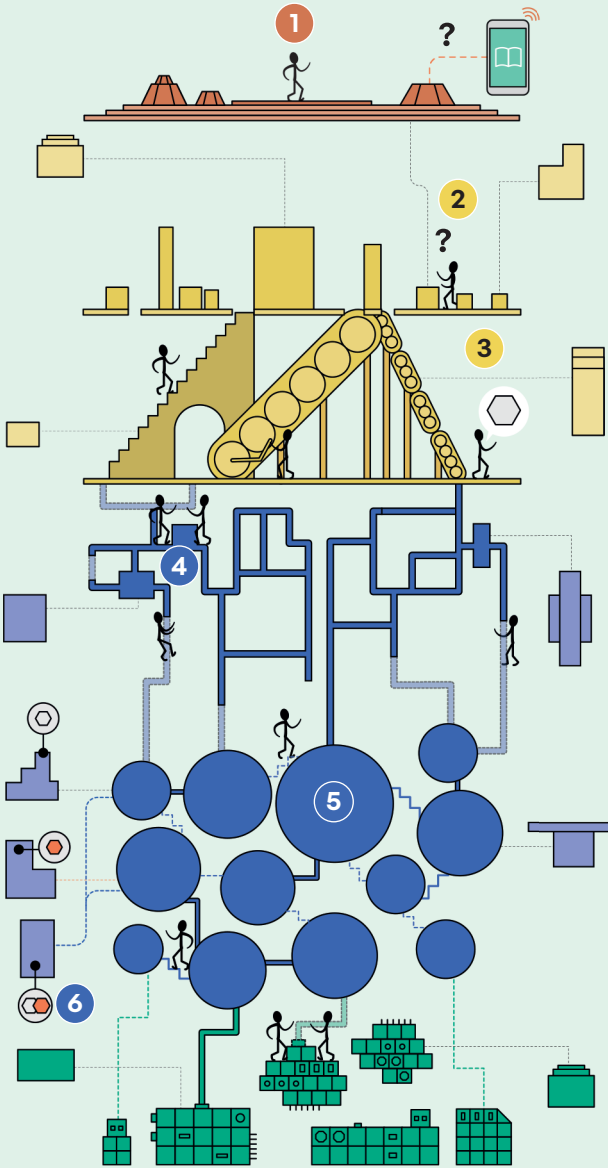
Technology

While this layer is about how IT is managed. IT staff handle identities, access and databases.

Examples:
- *IT managers and NRENs like SURF ensure secure connections and data exchanges between institutions.*
- *Integration specialists ensure standards for information exchange and storage are agreed upon and implemented (e.g. APIs).*

Use case challenge

1. Learner wants to review courses offered by multiple programs.

2. At the institution's top level, agreements need to be made regarding necessary accreditation, fit in mutual curricula and costing.

3. Educational services liaise with partners to determine which information can be obtained, and what types of applications are in use.

4. Integration architects investigate how the different applications can work together and how information can be obtained through standardised APIs.

5. The system administrator indicates that the information is in the wrong format and therefore cannot be exchanged with other applications.

6. Together, they decide to implement a common data standard for the course information.